

## SOME COLORADO FUNGI\*

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Except for a considerable number of papers on parasitic fungi, very little literature dealing with the fungous flora of the western states has yet appeared. As a matter of fact a prodigious amount of work is necessary before the fungi of any large section of the United States can be accurately catalogued. As a means to this end carefully prepared check lists are invaluable, provided the specimens and notes on which they are based are adequately preserved. Such lists are also of some value to local collectors, both in aiding them in their determinations and in stimulating more widespread interest in collecting and preserving the specimens.

The writer spent parts of the summers of 1913 and 1914 at the Mountain Laboratory of the University of Colorado for the purpose of collecting the fleshy and woody fungi of that region. Through the efforts of Dr. Francis Ramaley, Professor of Botany in the University of Colorado, a certain amount of financial assistance was obtained from that institution in return for a duplicate set of the specimens collected. These are, therefore, deposited in the herbarium of that University. The most complete set of specimens is retained in the writer's herbarium. Duplicates of some of the collections are in the herbarium of the Missouri Botanical Garden and the New York Botanical Garden.

The Mountain Laboratory of the University of Colorado is located in the town of Tolland, in Gilpin County, Colorado. This town lies on the Moffatt Railroad 47 miles northwest of Denver, and on South Boulder Creek. South Boulder Park, in which the town lies, has become well known to botanists through the writings of Dr. Ramaley, Professor W. W. Robbins, and others interested in the ecology of the eastern slopes of the Rocky Mountains. It lies at an elevation of practically 9,000 feet

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above sea level. The park itself is a dry grass land area about 2 miles long and half a mile wide, through which flows South Boulder Creek. Dense willow growths border parts of this stream and the soil beneath supports in proper season a considerable fungous flora. The grass land is too dry for all except those fungi of decided xerophytic habits, among the most important of which are puffballs, the fairy ring *Tricholoma* (*T. pre-magna*), and *Agaricus campestris*. The best collecting is to be found in the coniferous forests bordering the various streams that enter the park from the surrounding gulches and cañons. Of these the best in this locality are South Boulder Cañon and Jennie Creek. The latter is not much above the level of the park floor in elevation, but the former is a deep though fairly broad cañon extending from the west end of the park up to the continental divide, a distance of about 4 miles and with an elevation of from 9,000 to more than 10,000 feet. The tree growth in this cañon (as well as bordering all other streams) is largely of coniferous species, mostly *Picea engelmannii*. On the drier mountain slopes the lodge-pole pine predominates, and aspen thickets are not infrequent in moist situations.

Owing to the high elevation of this region spring is late in arriving and in both 1913 and 1914 snow drifts remained in the surrounding forests until nearly July 1, and at higher elevations much later. Both seasons the rainfall was light until about the middle or latter half of July, although light showers are of frequent (sometimes almost daily) occurrence. In July, however, heavy rains occurred and it was following these that fungi were found in greatest abundance. Apparently the fungous flora is not an unusually rich one, partially because of the short growing season. A total of nearly 1,000 collections were made in the two seasons but in neither instance did the collecting cover the entire season.

A considerable amount of information was collected as to the altitudinal distribution, seasonal appearance, and other ecological data pertaining to the fleshy fungi, but its publication is withheld for the present with the hope of adding to it in the near future. However, there appears to be almost as decided a suc-

cession of fungous genera and species throughout the season as is the case in flowering plants. The fact that with the rapid disappearance of the snow in June the earth warms up more rapidly than in places at lower elevations, makes this type of locality unusually favorable for studying this succession of forms.

In 1914 two days were spent in collecting in the vicinity of Denver and Golden in company with Professor E. Bethel, and those collections are included in this report. Professor Bethel has also sent in at various times specimens collected in different localities. Dr. Ramaley has supplied a small collection of specimens from Boulder and Tolland. But by far the larger part of the numbers here reported are from the vicinity of Tolland and collected by the writer.

Unfortunately the literature on American gill fungi is yet so fragmentary that it has been impossible to identify a large percentage of the collections in that family. Undoubtedly a considerable number of these are new to science but none such are described at this time.

The entire number of species listed in this report is 152. If all the collections obtained were determined the list would be at least twice as large. Even that number would represent only a fraction of the entire number of species to be found in this locality if the collecting could be extended over several entire seasons.

The writer desires to acknowledge his obligations to the University of Colorado and especially to Dr. Ramaley for furthering this work in all possible ways, and to other members of the laboratory staff and the various students whose interest in the work was decidedly helpful. In certain groups of these fungi the determinations have been made by specialists and such determinations have added considerably to the completeness and the accuracy of this list. Due credit is given throughout the list for determinations so made.

#### ASCOMYCETES<sup>1</sup>

<sup>1</sup> All determinations of Ascomycetes were either made or verified by Dr. F. J. Seaver.

##### I. ORDER SPHAERIALES

1. *Diatrypella verruciformis* (Ehrh.) Nito. On *Alnus*. Golden. Alt. 7000 ft. June 14, 1914. No. 1767.

## 2. ORDER PEZIZALES

2. *Discina ancilis* (Pers.) Sacc. On wet ground in coniferous forests. Jennie Creek and South Boulder Cañon. Alt. 9,000–10,500 ft. June 16, 19, 21, 30, 1914. Nos. 1739, 1805, 1810, 1841. Also collected by Dr. Ramaley at Tolland in 1912.  
Mature specimens bear considerable resemblance to *Gyromitra*. It is one of the earliest forms to appear in the springtime, following immediately after the disappearing snowdrifts.
3. *Geopyxis cupularis* (L.) Sacc. On ground where fires have been kindled. South Boulder Cañon. Alt. 9,000 ft. June 19, July 8, 22, 1914. Nos. 1796, 1879, 1968.  
A beautiful species, yellowish or brownish, more or less urn-shaped and about 1 cm. high.
4. *Pseudoplectania fulgens* (Pers.) Fuckel. On ground in coniferous forests. South Boulder Cañon. June 30, 1914. No. 1839.
5. *Sepultaria arenicola* (Lév.) Boud. On ground in aspen thicket. South Boulder Cañon. July 29, 1913. No. 2035.
6. *Cenangium populneum* (Pers.) Rehm. On dead limbs of *Populus*. Golden. Alt. 7,000 ft. June 14, 1914. No. 1755. The collection was made in company with E. Bethel.

## 3. ORDER HELVELLALES

7. *Gyromitra esculenta* (Pers.) Fr. On ground in coniferous forests. Ladora. Alt. 9,000 ft. June 21, 1914. No. 1806.
8. *Gyromitra gigas* (Krombh.) Cooke. On ground in coniferous forests. South Boulder Cañon. Alt. 10,000 ft. June 25, 30, 1914. Nos. 1829, 1837.
9. *Helvella infula* Schaeff. On ground in coniferous forest. Tolland, June 20, 1914. No. 1804.
10. *Helvella lacunosa* Afzel.? On ground in marshy aspen thicket. Tolland. July 14, 1913. No. 2008.
11. *Morchella conica* Pers. On ground. Tolland. July 24, 1913. No. 2028. Also collected by Dr. Ramaley in Jenny Lind Gulch, July, 1912.

## BASIDIOMYCETES

## HEMI-BASIDIOMYCETES

1. ORDER UREDINALES<sup>2</sup>

12. *Gymnosporangium clavariaeforme* (Jacq.) DC. On stems of *Juniperus sibirica*. Tolland. June 16, 1914. No. 1740. Very common on this host.
13. *Melampsora arctica* Rostr. On leaves of *Salix* sp. Tolland. July 16. No. 2563.
14. *Melampsora pyrolae* (DC.) Arthur. On leaves of *Pyrola*. Tolland and Golden. July 1, 1913; June 14, 1914. No. 1746, 2405.

<sup>2</sup> Dr. J. C. Arthur has determined all the rusts with the exception of Nos. 12 and 15, the former of which was determined by Dr. F. D. Kern, and the latter by Prof. C. R. Orton.

15. *Peridermium harknessii* American authors. (Not *P. harknessii* Moore.)  
Forming galls on *Pinus contorta*. Lake Eldora and Tolland. June 27, 1913, collected by W. W. Robbins. June, 1914, collected by E. Bethel. Nos. 2309, 2831.  
The alternate hosts of this rust are species of *Castilleja* and *Orthocarpus*.
16. *Phragmidium montivagum* Arth. On leaves of wild rose. Golden. June 14, 1914. No. 1749.
17. *Puccinia agropyri* Ellis & Ev. On leaves of *Thalictrum*. Tolland. July 19, 1913. No. 3565.
18. *Puccinia fergussoni* B. & R. On leaves of *Viola*. Tolland. July 14, 1913. No. 2010.
19. *Puccinia taraxaci* Plowr. On leaves of *Taraxacum officinale*. June 22, 1914. No. 2564.

## EU-BASIDIOMYCETES

## 1. FAMILY AURICULARIACEAE

20. *Auricularia auricula-judae* L. On pine logs. Tolland. July 16, 1913. No. 2014. Common after the July rains. Edible and quite delicious.

## 2. FAMILY TREMELLACEAE

21. *Eridia glandulosa* (Bull.) Fr. On dead alder and willow. Golden and Tolland. Alt. 7,000-9,000 ft. July 16, 1913; June 14, 1914. Nos. 1757, 2017.

## 3. FAMILY DACRYOMYCETACEAE

22. *Guepinia monticola* Tracy & Earle. This species was determined by C. G. Lloyd, but the collection has recently been mislaid and the data concerning it is therefore not available. It was collected at Tolland, on fallen coniferous wood, and has more the appearance of a Discomycete than a Basidiomycete. No. 1737.

## 4. FAMILY THELEPHORACEAE

23. *Corticium corrugae* Burt. On dead pine limbs. Tolland and Glacier Lake (Prof. Bethel). Alt. 9,000-10,000 ft. June 16, 20, 1914. Common on pine slash on the ground. Nos. 1741, 1801, 1803, 2386.
24. *Corticium galactinum* (Fr.) Burt. On old coniferous log. Golden. Alt. 7,000 ft. June 14, 1914. No. 1745.
25. *Peniophora cinerea* Fr. On dead *Alnus*. Golden. June 14, 1914. Nos. 1744, 1769.
26. *Stereum* ————. On coniferous logs. Tolland. June 29, 1913; June 17, 1914. Nos. 1781, 2336. A species quite similar to *Stereum bicolor*, but distinct.
27. *Stereum fasciatum* Schw. On dead *Alnus*. Golden. June 14, 1914. No. 1758.
28. *Stereum rameale* Schw. On dead *Alnus*. Tolland. June 30, 1913. No. 2000. Both this and the preceding species are rare in this locality as contrasted with their abundant occurrence in most eastern states.

29. *Stereum rufum* Fr. On dead limbs of *Populus*. Golden and Tolland. Alt. 7,000–9,000 ft. June 14, July 5, 1914. No. 1761. For an account of this species see von Schrenk, H., *Bul. Torr. Club* 21: 385–388. 1894.
30. *Thelephora caryophyllea* (Schaeff.) Fr. On ground in forests and on mountain slopes. Tolland. June 25, 1913; Aug. 3, 1914. Nos. 2208, 2082.
31. *Thelephora palmata* (Scop.) Fr. On Ground in forests. Boulder. June 21, 1914. No. 2385. Collected by E. Bethel. This species is usually easily recognized by the foetid odor of fresh specimens. The odor of this collection still persists after nearly five years in the herbarium.
5. FAMILY CLAVARIACEAE
32. *Clavaria inaequalis* Lasch. On ground among pine needles. Tolland. July 25, 1914. No. 1979.  
Common after the July rains. Gregarious and easily obtained in abundance.

6. FAMILY HYDNACEAE

33. *Hydnum imbricatum* (Pers.) Fr. On stream bank in coniferous forest. Tolland. July 28, 1913. No. 2029.

7. FAMILY AGARICACEAE

34. *Agaricus campestris* (L.) Fr. On the ground in dry grassland. Tolland. Alt. 9,000 ft. June 4, 1914. No. 2112. Not abundant but fairly common after the July rains.
35. *Agaricus silvicola* (Vitt.) Fr. On the ground in woods or along their borders. Tolland. Alt. 9,000 ft. June 20, 22, 23, 1914. Nos. 1952, 1966, 2423.
36. *Agaricus villaticus* Brond. On manure heap. Tolland (Golden Sun Mine). Alt. 8,700 ft. June 22, 1914. No. 1811.  
This collection is so referred on the basis of the striking resemblance to Cooke's illustrations, pl. 584. It may be only an overgrown form of *A. campestris*. The pileus of the largest specimen was 18 cm. broad, somewhat scaly, avellaneous or wood brown, taste amygdaline.
37. *Amanita muscaria* (L.) Fr. On ground in woods along stream. Tolland. Alt. 9,000 ft. July 27, 1914. No. 1985. But one specimen of this species was collected.
38. *Amanita phalloides* Fr. On the ground in pine woods. Tolland. Alt. 9,000 ft. July 5, 1914. No. 2113. The specimens are not typical and may have to be referred to another species.
39. *Amanitopsis vaginata* (Bull.) Roze. On the ground, especially in aspen thickets. Boulder. July 15, 1914. E. Bethel. Tolland. Alt. 9,000 ft. June 23, July 12, 19, 21, 22, 25, August 3. Nos. 1342, 1929, 1971, 1974, 1975, 2090, 2845, 2852, 2850. Also collected by Dr. Ramaley at Boulder, July 16, 1913.
40. *Anellaria separata* (L.) P. Karst. On manure heaps. Rollinsville. Alt. 8,700 ft. June 22. Tolland, Alt. 9,000 ft. June 23, 25, 1913. Nos. 1242, 1246, 1813.
41. *Bolbitius fragilis* Fr. On the ground among grass. Mammoth Creek. Alt. 9,500 ft. July 18, 1914. No. 1928.

42. *Cantharellus cibarius* Fr. On the ground under lodge-pole pines. Tolland. Alt. 9,000 ft. July 29, 1914. No. 2060.
43. *Cantharellus muscigenus* (Bull.) Fr. On the ground among mosses under conifers. Tolland. Alt. 9,000 ft. June 26, 1913. No. 1263.  
An interesting plant, consisting of a short lateral stem, a pileus less than 1 cm. broad, and bearing branched ribs on the lower side.
44. *Clitocybe coloradensis* Murrill. On moist grassy ground under willows. Tolland. July 22, 1913; July 11, 21, 1914. Nos. 1354, 1890, 1953.  
No. 1890 is designated as the type of this species by Murrill.
45. *Clitocybe infundibuliformis* (Schaeff.) Fr. On the ground in grassland. Tolland. Alt. 9,000 ft. July 14, 1914. No. 1914.  
The small size, infundibuliform pileus, and pinkish-cinnamon color are the chief characteristics.
46. *Clitocybe inversa* (Scop.) Fr. On compost and forest litter. South Boulder Cañon. Alt. 9,000 ft. July 21, 1913; July 8, 22, August 5, 1914. Nos. 1333, 1884, 1961, 2122.  
The pileus is pinkish-cinnamon or apricot buff in color, and 5-10 cm. broad. The spores are subglobose, slightly echinulate, 3.5-5  $\mu$ . I am indebted to Dr. Murrill for the determination.
47. *Clitocybe laccata* (Scop.) Fr. On the ground, usually along streams. Tolland. Alt. 9,600 ft. June 26, 1913; July 5, 7, 12, 17, 20, 30. Nos. 1258, 1405, 1858, 1870, 1894, 1921, 1945.
48. *Clitocybe maxima* (Gart. & Meyer) Fr. On the ground, especially on moist cleared mountain sides. South Boulder Cañon Alt. 9,500-10,000 ft. July 22, 29, 1913. Nos. 1347, 1400.  
A very large plant (up to 25 cm. broad) with thin depressed pileus, white in color. Clement's illustration (Minnesota Mushrooms, f. 12) shows the plant well.
49. *Clitocybe multiceps* Peck. On the ground. Boulder. Alt. 7,000 ft. June 22, 1914. No. 1821. Collected by E. Bethel.  
The cepitose habit, large size, and the globose spores are the distinguishing characters.
50. *Clitocybe overholtsii* Murrill. On ground in coniferous forests. Tolland and South Boulder Cañon. July 22, 29, Aug. 1, 5, 1914. Nos. 1964, 2114. No. 2114 was designated by Murrill as the type collection of this species.
51. *Clitocybe tortilis* Fr. On ground. Boulder. Aug. 2, 1914. No. 2843. Collected by E. Bethel.
52. *Clitocybe vilescens* Peck? On the ground in grassland. Tolland. Alt. 9,000 ft. June 24, Aug. 4, 1914. Nos. 1820, 2111.  
The small size (1-3 cm.), the dull cinereous color, the farinaceous taste, and the habitat appear to be the distinctive characters.
53. *Collybia acervata* Fr. On rotten wood. Tolland and Gilpin Saw Mill. Alt. 9,000-10,000 ft. July 29, August 2, 1913; July 27, 1914. Nos. 1391, 1996.
54. *Collybia amabilipes* Peck. On stumps or attached to buried wood. Tolland and South Boulder Cañon. Alt. 9,000-9,500 ft. July 3, 1913; July 8, 1914. Nos. 1278, 1888. *Collybia tenuipes* Schw. is said to be the same plant. As has been previously pointed out, the resemblance

of this plant to *C. velutipes* is close, and dried specimens of the two species are sometimes hard to distinguish.

55. *Collybia maculata* Alb. & Schw. On humus. Tolland. Alt. 9,000 ft. July 27, 1914. No. 1991.  
 56. *Coprinus atramentarius* (Bull.) Fr. On ground around stump. Tolland. Alt. 9,000 ft. July 3, 1914. No. 1277.  
 57. *Coprinus micaceus* (Bull.) Fr. On ground. Boulder. Alt. 7,000 ft. June 23, 1914. Collected by E. Bethel. No. 2848. Also collected by Dr. Ramaley at Tolland. June 26, 1911.

A third species of *Coprinus* was collected rather abundantly at Denver by Prof. Bethel, on stems of *Agropyron*, in June, 1914. The identity of the species has not been established.

58. *Cortinarius*<sup>3</sup> *argentatus* Fr.? On ground in coniferous forests. South Boulder Cañon. Alt. 9,000 ft. July 8, 1914. No. 1885.  
 59. *Cortinarius cinnamomeus* Fr. On ground in coniferous forests, aspen thickets, and under willows. Tolland. Alt. 9,000 ft. July 18, 1913; July 14, 1914. Nos. 1324, 1911, 1912.

An abundant species, and edible.

60. *Cortinarius concinnus* P. Karst. On grassy ground among willows. Boulder Park. Alt. 9,000 ft. July 14, 22, 1914. Nos. 1913, 1965.

Abundant in 1914. Characterized by the color, which is brick-red, ferruginous, or almost blood-red.

61. *Cortinarius corrosus* Fr.? On the ground in coniferous forests. Jennie Creek. Alt. 9,000 ft. July 20, 27, 1914. Nos. 1943, 1998.  
 62. *Cortinarius decoloratus* Fr. On the ground in coniferous forests. Tolland. Alt. 9,000 ft. July 28, 1913. No. 1377.  
 63. *Cortinarius glandicolor* Fr. On the ground in coniferous forest. Jennie Creek. Alt. 9,000 ft. July 27, 1914. No. 1990.  
 64. *Cortinarius herepeticus* Fr.? On the ground in coniferous forests. Tolland. Alt. 9,000 ft. July 28, 1913. No. 1378.  
 65. *Cortinarius malicorius* Fr. On the ground in coniferous forests. Jennie Creek. Alt. 9,000 ft. June 17, 1914. No. 1764.  
 66. *Cortinarius mucifluus* Fr. On the ground in aspen thickets. Tolland. Alt. 9,000 ft. July 25, August 3, 1914. Nos. 1982, 2096.  
 67. *Cortinarius psammocephalus* Fr. On the ground under pines. Tolland. Alt. 9,000 ft. Aug. 3, 1914. No. 2092.  
 68. *Cortinarius rusticus* P. Karst. On the ground in coniferous forest. Jennie Creek. Alt. 9,000 ft. July 20, 1914. No. 1951.

In point of numbers this seems to be the largest genus in the Colorado fungous flora. In addition to the collections cited above there are about 25 collections of unidentified material in the writer's herbarium.

69. *Flammula penetrans* Fr. On rotten coniferous wood in pine woods. Tolland. Alt. 9,000 ft. July 29, 1914. No. 2070.  
 70. *Flammula spumosa* Fr. Usually on buried wood, especially in old corduroy roads. Also on logs. Golden, South Boulder Cañon, Tolland. Alt. 7,000-10,000 ft. June 15, 19, 21, 28, 1913; June 14, 25, July 2, 5,

<sup>3</sup> All determinations in this genus were made by Dr. C. H. Kauffman.



7, 12, 1914. Nos. 1299, 1330, 1339, 1372, 1747, 1825, 1848, 1857, 1867, 1892.

Very abundant, especially after July rains. Edible.

71. *Hebeloma album* Peck. On ground in aspen thicket. Tolland. July 29, 1913. No. 1402.

This collection agrees well with the type specimens at Albany.

72. *Hebeloma crustuliniforme* (Bull.) Fr. On ground in aspen thicket. Tolland. Aug. 3, 1914. No. 2091.

73. *Hygrophorus conicus* (Scop.) Fr. On ground on rocky grassy slopes after heavy rains. Tolland. June 26, 27, 1913; July 13, 24, 1914. Nos. 1264, 1265, 1362, 1900.

Easily recognized by the bright-red conical pileus that in drying generally becomes blackish.

74. *Hypholoma incertum* Peck. On grassy ground. Boulder and Denver. May, July, 1914. Collected by E. Bethel. Nos. 1772, 2838. Also collected by Dr. Ramaley at Boulder, July 20, 1913.

75. *Hypholoma fasciculare* Huds. Attached to buried wood, on stumps, or apparently on the ground. South Boulder Cañon. Alt. 9,000-9,500 ft. July 29, 1913; July 12, 1914. Nos. 1397, 1895.

76. *Lactarius<sup>4</sup> alpinus* Peck. On ground in aspen thickets. Tolland. Aug. 1, 1913. No. 1413.

77. *Lactarius aspidioides* Burlingh. On ground under willows. Tolland. July 22, 1914. No. 1955.

78. *Lactarius cilicioides* Fr. On ground in aspen thickets and under pines. Tolland. Alt. 9,000-9,500 ft. July 29, 1913; July 29, 1914. Nos. 1392, 2081. Dr. Ramaley also collected it in South Boulder Cañon, August 31, 1912.

79. *Lactarius deliciosus* (L.) Fr. On ground in coniferous forests, especially on sandy slopes. Tolland and South Boulder Cañon. July 15, 1913; July 17, 29, August 5, 1914. Nos. 1913, 1927, 2062, 2123.

80. *Lactarius helvus* Fr. On ground in coniferous forests. Tolland. July 28, 1913. No. 1380.

81. *Lactarius lividorubescens* (Batsch.) Burlingh. On ground in aspen thickets. Tolland. Aug. 3, 1914. No. 2085.

82. *Lactarius parvus* Peck. On mossy bank by stream. Tolland. July 5, 1913. No. 1284.

83. *Lactarius subdulcis* Bull. On the ground in coniferous forests. Tolland. July 16, 30, 1913. Nos. 666, 1309.

84. *Lentinus lepideus* Fr. On railroad ties, coniferous logs and stumps, bridge timbers etc. Tolland and South Boulder Cañon. June 27, July 4, 13, 22, 31, 1913; June 2, 25, July 8, 12, 16, 1914. Nos. 665, 667, 1270, 1279, 1292, 1349, 1819, 1826, 1897, 1916.

85. *Lepiota granulosa* (Batsch) Gray. On ground in coniferous forests, especially in clearings. Tolland and South Boulder Cañon. July 30, 1913; July 21, 22, Aug. 5, 1914. Nos. 1337, 1406, 1906, 2115.

86. *Lepiota naucina* Fr. In dry grassland. Tolland. Aug. 4, 1914. No. 2108.

<sup>4</sup> All determinations in this genus were either made or verified by Miss G. S. Burlingham.

87. *Marasmius androsaceus* (L.) Fr. Among needles of lodge-pole pines. Tolland. July 16, 1913; July 20, 1914. Nos. 1305, 1936.
88. *Marasmius rotula* (Scop.) Fr. On rotten wood. Boulder. Aug. 2, 1914. Collected by E. Bethel. No. 2836.
89. *Marasmius semihirtipes* Peck. Among pine needles in coniferous forests. Tolland. July 16, 24, 1903; July 20, 1914. Nos. 1304, 1355, 1937.
90. *Mycena pura* (Pers.) Fr. On ground in coniferous forests. Tolland and South Boulder Cañon. July 20, 22, 1914. Nos. 1935, 1962.
91. *Omphalia campanella* (Batsch) Fr. On rotten logs of conifers. Golden, Tolland, and South Boulder Cañon. Alt. 7,000 to 9,500 ft. June 14, 17, 19, July 22, 1914. Nos. 1751, 1777, 1790, 1963.
92. *Pholiota acericola* Peck. On old logs and on the ground. Tolland. July 7, 1914. No. 1866.
93. *Pholiota howeana* Peck. On ground in dry coniferous forest. Tolland. June 26, 1913. No. 1256.
94. *Pholiota marginella* Peck. On dead coniferous timbers and on sawdust heaps. Tolland, South Boulder Cañon, and Gilpin sawmill; altitude 9,000 to 10,000 ft. June 26, July 1, 8, 1913; June 17, 18, 30, July 2, 1914. Nos. 1261, 1274, 1765, 1778, 1779, 1784, 1831, 1847.
- I have referred here the common small yellowish-brown *Pholiota* so abundant on old coniferous logs in that region. It differs from *P. marginata* in having smaller, smooth, thin-walled spores and lacking cystidia. The spores of the latter species are much darker due to the heavy wall that is slightly roughened. *P. unicolor* is a related species with hymenial characters as in *P. marginata* but with a well developed persistent annulus. The spores of *P. marginella* measure  $6-9 \times 3.5-5 \mu$ . Those of the other two species measure  $8-10 \times 5 \mu$ .
95. *Pholiota praecox* (Pers.) Fr. On the ground in grassy places and in open coniferous forests. Tolland, South Boulder Cañon, and Lake Eldora. June 25, 26, July 4, 18, 21, 1913; June 25, July 19, 1914. Nos. 1253, 1267, 1316, 1343, 1797, 1824, 2308, 2329.
96. *Pholiota vermiflua* Peck. In grassy ground. Denver. May, 1914. Nos. 1771, 1773. Collected by E. Bethel.
97. *Pleurotus ostreatus* Jacq. On dead wood. Tolland. June 27, 1913; July 29, 1914. Nos. 1269, 2064.
98. *Pluteus cervinus* (Schaeff.) Fr. On ground rich in humus. June 27, 1913; July 12, 1914. Nos. 1260, 1893.
99. *Russula*<sup>5</sup> *abietina* Peck. On moist ground in coniferous forests. Tolland and South Boulder Cañon. July 16, 30, 1913. Aug. 5, 1914. Nos. 1306, 1403, 2117.
100. *Russula alutacea* Fr. On ground in coniferous forests. Tolland and South Boulder Cañon. July 24, 1913; Aug. 3, 4, 5, 1914. Nos. 1359, 2097, 2105, 2106, 2116, 2124.
101. *Russula atroviolacea* Burlingh. On ground under willows. Tolland. July 14, 1914. No. 1909. This collection was made the type of a new species by Miss Burlingh.
102. *Russula betulina* Burlingh. On ground in aspen thickets or under pines. Tolland, July 25, Aug. 3, 1914. Nos. 1978, 2084, 2094.

<sup>5</sup> All determinations in this genus were made by Miss G. S. Burlingh.

103. *Russula chamaeleontina* Fr. On ground in coniferous forest. Tolland. July 18, 1913. No. 1315.
104. *Russula consobrina* Fr. On ground in coniferous forests. Tolland. July 28, 1913. No. 1386.
105. *Russula emetica* Fr. On ground in coniferous forests. South Boulder Cañon. Aug. 2, 1913. No. 1423.
106. *Russula fallax* Fr. On ground under willows. Tolland. July 8, 1914. No. 1883.
107. *Russula flava* Romell. On ground in aspen thicket. Tolland. July 24, 1913. No. 1365.
108. *Russula nigrodisca* Peck. On mossy decayed logs in aspen thickets. Tolland. Aug. 1, 1913; July 25, 1914. Nos. 1411, 1983. The type collection of this species was collected on St. Paul Island, Behring Sea, and otherwise the species is only known from Colorado and Vermont.
109. *Russula subolivascens* Burlingh. On ground in aspen thicket. Tolland. Aug. 3, 1914. Nos. 2083, 2089.
110. *Russula raoultii* Quéf. On ground in mixed forest. Tolland. July 27, 1914. No. 1988.
111. *Russula squalida* Peck. On ground in aspen thicket. Tolland. Aug. 3, 1914. No. 2088.
112. *Russula subalutacea* Burlingh. On ground in mixed forest or under pines. Tolland. July 24, 1913; July 27, Aug. 3, 4, 1914. Nos. 1363, 1987, 2093, 2104.  
No. 2093 has been made the type collection for this species by Miss Burlingham.
113. *Russula turci* Bres. On ground in coniferous forest. Tolland. July 28, 1913. No. 1389.
114. *Russula xerampelina* Fr. On ground at edge of pine forest. Tolland. July 24, 1913. No. 1364.
115. *Panaeolus retirugis* Fr. On ground in path. Tolland. July 4, 1914. Collected by Miss Helen Leonard. No. 1854.
116. *Stropharia semiglobata* (Batsch.) Fr. On horse dung. Tolland. July 12, 19, 1914. No. 1899, 1930.
117. *Tricholoma praemagna* Murrill. On ground in dry grassland. Tolland. June 27, 1913; July 22, Aug. 5, 1914; May, 1917. Nos. 1268, 1972, 2121, 3908.

This is the fungus that causes the formation of the conspicuous fairy rings in open grasslands of this region. For an account of these see Ramaley, F., *Torreya* 16: 193-196. 1916. The fungus is used as an article of food in this locality.

#### 8. FAMILY BOLETACEAE

118. *Boletinus pictus* Peck. On ground in pine woods. Tolland. Alt. 9,000 ft. July 27, 1914. No. 1999.
119. *Boletus brevipes* Peck. On ground in coniferous forests. Especially on sandy ground. Under lodge-pole pines. Tolland. Alt. 9,000 ft. June 26, 1913; June 12, July 2, 29, 1914. Nos. 1815, 1851, 2063, 2312.

Dr. Murrill refers this species to *B. granulatus* but his description of that species does not fit these collections as well as does Peck's description of *B. brevipes*.

120. *Boletus edulis* (Bull.) Fr. On the ground in coniferous forests. Tolland. Alt. 9,000 ft. July 17, August 4, 1914. Nos. 1926, 2107.  
 121. *Boletus granulatus* (L.) Fr. On the ground in coniferous forests. Tolland. Alt. 9,000 ft. June 25, 1913; July 20, 1914. Nos. 1940, 2328.  
 122. *Boletus hirtellus* Peck. On the ground in the upland lodge-pole pine forests. Tolland. Alt. 9,000 ft. Aug. 6, 1914. No. 2057.

This species is a very beautiful one with a lemon yellow pileus thickly adorned with small tufts of hair. It is quite abundant after the July rains.

123. *Boletus scaber* Fr. On ground, usually in aspen thickets. Rollinsville, Tolland and South Boulder Cañon. June, July, and August. Nos. 1812, 1856, 1917, 1827, 1859, 2424, 2038.

The species is very abundant, and of all the collections made only one was from the coniferous forest floor. Its usual habitat is grassy aspen thickets. The pileus of one specimen measured 26 cm. in diameter. The color is very variable, from white to tan, brown, or red. Edible.

#### 9. FAMILY POLYPORACEAE

124. *Favolus canadensis* Klotzsch. Boulder. Alt. 7,000 ft. On dead choke-cherry. July 1, 1914. Collected by E. Bethel. No. 2832.  
 125. *Fomes fulvus* (Scop.) Gill. On *Prunus americana*. Boulder. Alt. 7,000 ft. June 24, 1914. Collected by E. Bethel. No. 2833.  
 126. *Fomes pini* (Thore) Lloyd. On coniferous trees and logs. Tolland, South Boulder Cañon and Lake Eldora. Alt. 9,000-9,500 ft. June 30, July 7, 1913; June 29, July 3, 4, 19, 28, 1914. Nos. 632, 642, 1844, 1877, 2018, 2033, 2391.  
 127. *Fomes pinicola* (Sw.) Cooke. On coniferous trees and logs. Tolland and South Boulder Cañon. Alt. 9,000-10,000 ft. June 23, 29, July 1, 1913; July 7, 1914. Nos. 645, 1875, 2005, 2402.  
 128. *Lenzites saepiaria* (L.) Fr. On coniferous logs. Tolland. June 29, 1913; July 7, 1914. Nos. 1878, 2313.  
 129. *Polyporus abietinus* (Dicks.) Fr. On coniferous logs. Tolland. June 30, July 8, 1913. Nos. 2001, 2007.

The former collection is of the sub-lamellate type of the plant, which is common in the east but more rarely found in the west.

130. *Polyporus adustus* (Willd.) Fr. On stump of *Pinus*. Tolland. June 17, 1914. No. 1780. An unusual host for this species.  
 131. *Polyporus aboluteus* Ellis & Ev. On coniferous logs mostly at high elevations (9,000 to 10,000 ft.). Tolland and South Boulder Cañon up to timber line. June 29, July 1, 1913; June 21, 25, 30, 1914. Nos. 629, 641, 1807, 1830, 1832.

A common orange red species often more or less resupinate.

132. *Polyporus confluens* Fr.(?). Collected by Dr. Ramaley at Boulder, Aug. 30, 1913.

This species is incorporated with some misgiving. The collection

consists of 8 or 10 plants preserved in formaldehyde. Undoubtedly most of the original color is lost, but there is a decided red or yellowish red tint to stems and tubes of some specimens.

133. *Polyporus elegans* (Bull.) Fr. On rotten wood. Tolland. July 24, 1913. No. 2027.
134. *Polyporus leucospongia* Cooke & Harkness. On coniferous logs at elevations of 9,000 to 11,000 ft. Tolland and South Boulder Cañon up to timber line. June 29, July 13, 1913; June 25, 29, 30, July 2, 1914. Nos. 643, 644, 1828, 1840, 2353, 2388.  
A soft, pure white, sessile species. Rather abundant.
135. *Polyporus parmagenus* Fr. On dead *Populus*. Golden. June 14, 1914. No. 1756.

This collection represents the thick form of the species, more or less characteristic of the plant when growing on this host, and described by Murrill as *P. subchartaceus*.

136. *Polyporus perennis* (L.) Fr. On ground under pines. Tolland. Aug. 3, 1914. No. 2099.
137. *Polyporus ursinus* Lloyd. On pine logs. Tolland. July 18, 1913. No. 2016. I am indebted to Mr. C. G. Lloyd for the determination of this and the following species.
138. *Polyporus varius* Fr. On various kinds of dead wood. Tolland. June 20, July 7, 20, 1914. Nos. 1818, 1876, 1947.

This species is a close relative of *P. elegans*, having the general colors and the blackened stem of that plant.

139. *Trametes carnea* Fr. On coniferous wood. Golden. June 14, 1914. No. 1760.
140. *Trametes peckii* Kalchbr. Substratum unreported. Denver June, 1914. No. 1774. Collected by E. Bethel.
141. *Trametes protracta* Fr. On coniferous logs. Tolland. June 18, July 2, 1914. Nos. 1793, 1852.

This plant is by some regarded as the trametoid form of *Lenzites saepiaria*.

142. *Trametes serialis* Fr. On dead wood. Tolland. June 18, 1914. No. 1789.

#### 10. FAMILY LYCOPERDACEAE<sup>6</sup>

143. *Bovista plumbea* Pers. On ground in dry grassland. Tolland. July 29, 1913; July 8, 1914. Nos. 1889, 2037, 3184.
144. *Calvatia caelata* Bull. On ground in open grassland or in thin forests. Tolland. July 8, 1913; June 16, 1914. Nos. 1742, 2006.
145. *Calvatia lilacina* Berk. On ground in dry grassland. Tolland. Aug. 4, 1914. No. 2102.
146. *Lycoperdon cepaeforme* Bull. On ground in pine woods. Tolland. July 29, 1914. No. 2075.
147. *Lycoperdon cruciatum* Roth. On ground in dry grassland or in thin woods. Tolland. July 29, Aug. 3, 1914. Nos. 2076, 2103.

<sup>6</sup> All determinations in this family were either made or verified by C. G. Lloyd.

148. *Lycoperdon gemmatum* Batsch. On ground in thin forests and in dry grassland. July 29, Aug. 3, 1914. Nos. 2077, 2087.
149. *Lycoperdon umbrinum* Pers. On ground in coniferous forests. South Boulder Cañon. July 8, 1914. No. 1881.
150. *Secotium acuminatum* Mont. On ground in dry grassland. Tolland. July 29, 1913. No. 2036.

## 12. FAMILY NIDULARIACEAE

151. *Cyathus vernicosus* DC. On old paper along stream in coniferous forest. Jennie Creek. Altitude 9,000 ft. July 7, 1914. No. 1873.

## 12. FAMILY PHALLACEAE

152. *Phallus impudicus* L. On the ground. Boulder. June 23, 1914. Collected by E. Bethel. No. 2859. Also collected by Dr. Ramaley at Boulder, May, 1912.

It is worthy of special note that both these collections were made in the spring. The specimens were in good condition and some were in the egg stage.

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